

Non-CO₂ Greenhouse Gases: Methane

Source/Sectors: Natural Gas Systems (Production; Processing; Transmission)

Technology: Replace ignition/reduce false starts (A.1.2.1.14; A.1.2.3.12)

Description of the Technology:

In the United States and worldwide, many efforts have been made to identify and implement mitigation options to reduce methane emissions from the natural gas sector (USEPA, 2003). For example, the Natural Gas STAR program is a voluntary partnership between US EPA and the oil and gas industry to identify and implement cost-effective technologies and measures to reduce methane emissions. The measures to reduce methane emissions from the natural gas systems can be grouped into the following mitigation strategies: prevention, recovery and re-injection, recovery and utilization, and recovery and incineration (Hendriks & de Jager, 2001).

Before starting a compressor, the discharge header is unloaded by venting gas to the atmosphere. The engine is then turned over, often using a gas-expansion turbine starter. Both operations vent methane to atmosphere. Replacing old point-contact ignition systems with newer electronic designs can reduce false starts and eliminate methane emissions (Fernandez *et al.*, 2005).

Effectiveness: One partner of the Natural Gas Star Program reported reducing false starts from 150 to 10 per unit by replacing the ignition system, and saving 1,150 scf of methane per start (USEPA, 2008).

Implementability: This option may be applied to all engine driven compressors, pumps, and generators with outdated ignition systems (USEPA 2008).

Reliability: Methane emissions reductions of 21 Mcf per year result from replacing the ignition system on one 3,000-hp internal combustion engine and reducing startup attempts from 15 to 1 per year (USEPA, 2008).

Maturity: Good

Environmental Benefits: Methane emission reduction

Cost Effectiveness: This technology can pay back quickly. The primary justification is a reduction in operating costs. A unit with more than 100 false starts per year is an inconvenience to a company, as personnel must spend an inordinate amount of time attending to the unit. The value of natural gas savings coupled with significant labor savings will pay back the cost of upgrading ignition systems (USEPA, 2008).

- Capital Costs (including installation): \$1,000-\$10,000
- Operating and Maintenance Costs (annual): <\$100
- Payback (Years): 0-1

Industry Acceptance Level: Southern California Gas Company

Limitations: Electronic ignition systems require a small amount of electricity, such as can be provided by a solar recharged battery (USEPA, 2008).

Sources of Information:

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